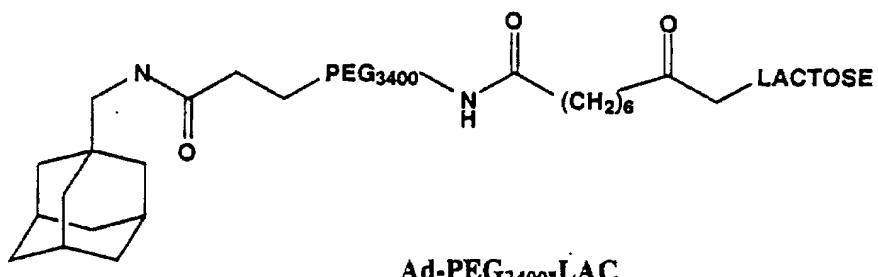
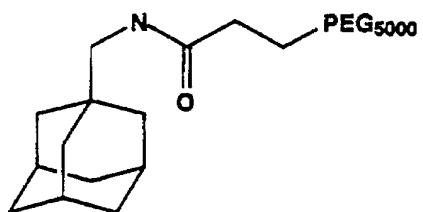


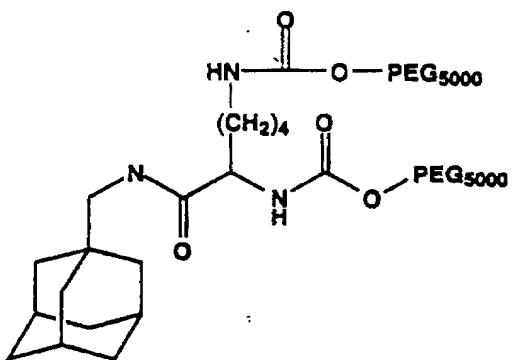
Ad-PEG₃₄₀₀



Ad-PEG₃₄₀₀-LAC



Ad-PEG₅₀₀₀



Ad-(PEG₅₀₀₀)₂

Figure | Structures of Various Adamantane-PEG molecules.

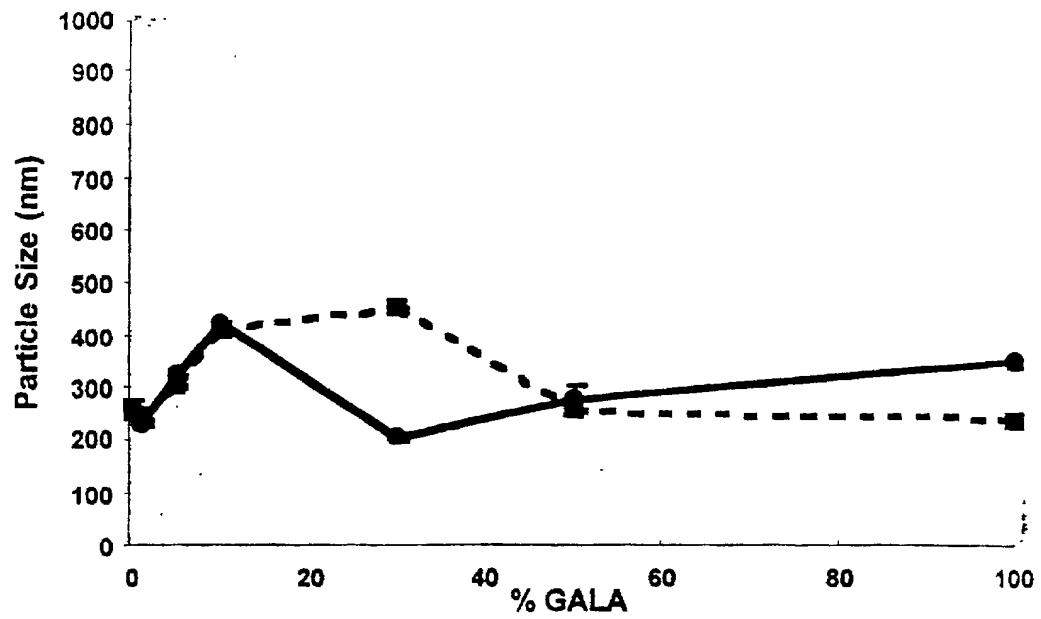


Figure 2. Hydrodynamic diameter of GALA (dashed line) and GALA-Ad (solid line)-modified polyplexes.

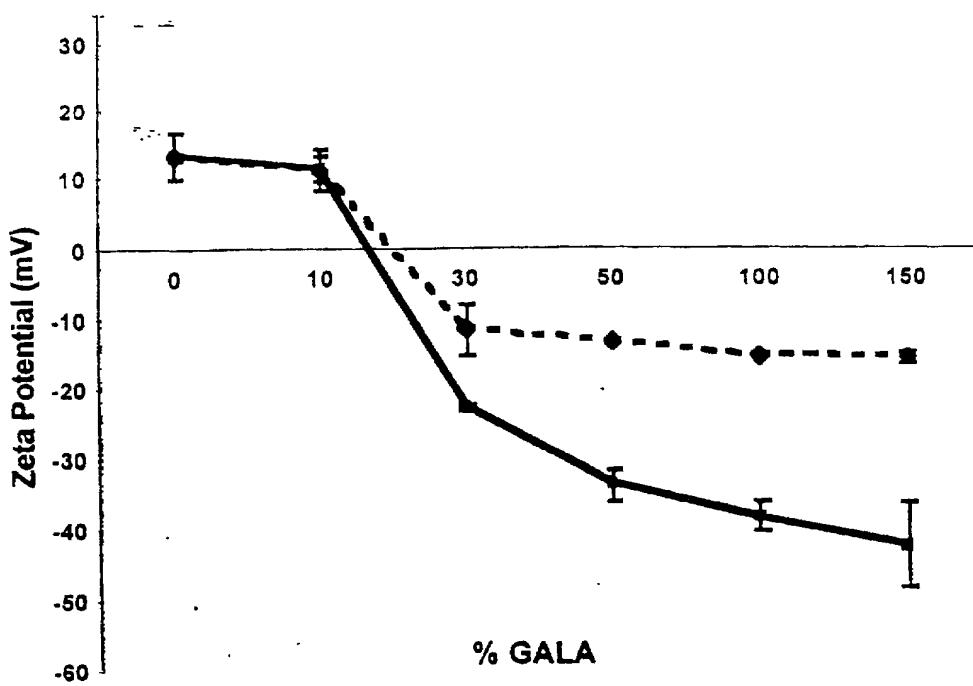


Figure 3. Zeta potential of GALA (dashed line) and GALA-Ad (solid line)-modified polyplexes.

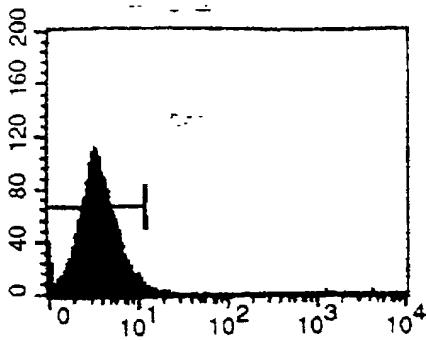


Fig 4a. Untransfected BHK-21 cells

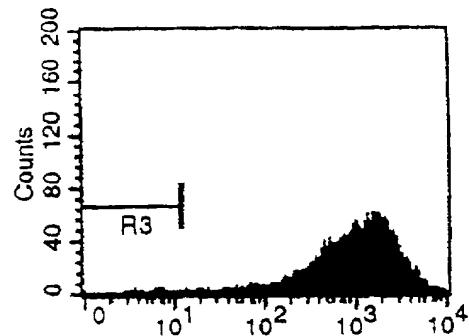


Fig 4b. BHK-21 cells transfected with β CDP6/FITC-Oligo at 5 \pm -%

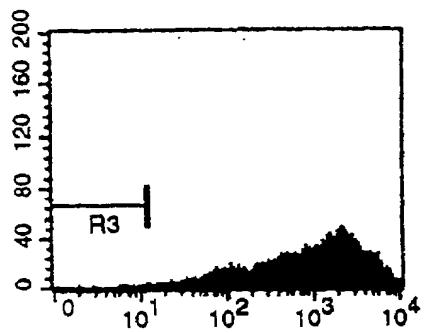


Fig 4c. BHK-21 cells transfected with β CDP6/FITC-Oligo/50% GALA

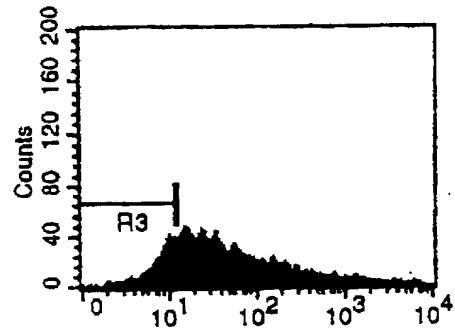


Fig 4d. BHK-21 cells transfected with β CDP6/FITC-Oligo/50% GALA-Ad

Fig 4. Uptake of GALA-Ad and GALA modified polyplexes by BHK-21 cells.

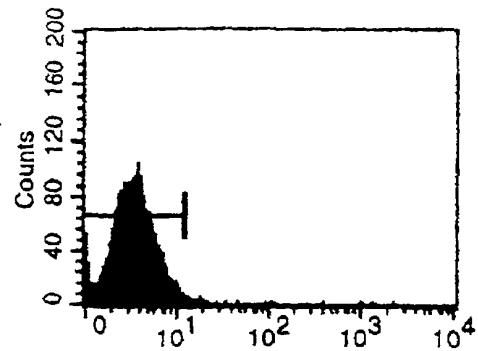


Figure 5a. Untransfected HUH-7 cells

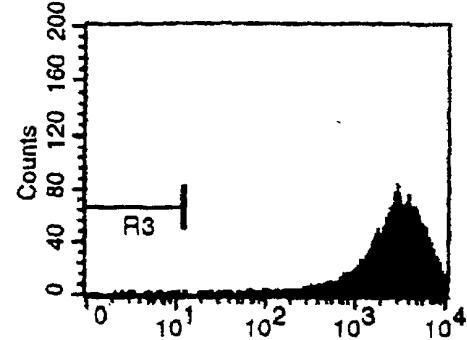


Figure 5b. HUH-7 transfected with β CDP6/FITC-Oligo at 5+/-

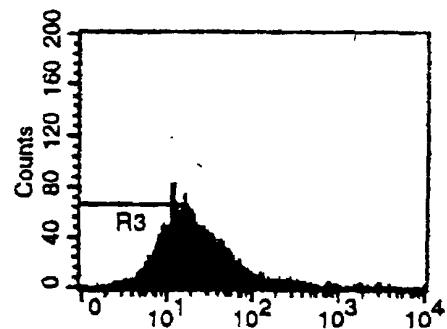


Fig 5c. HUH-7 transfected with β CDP6/FITC-Oligo/ 50% GALA-Ad

Fig 5. Uptake of GALA-Ad and GALA modified polyplexes by HUH-7 cells

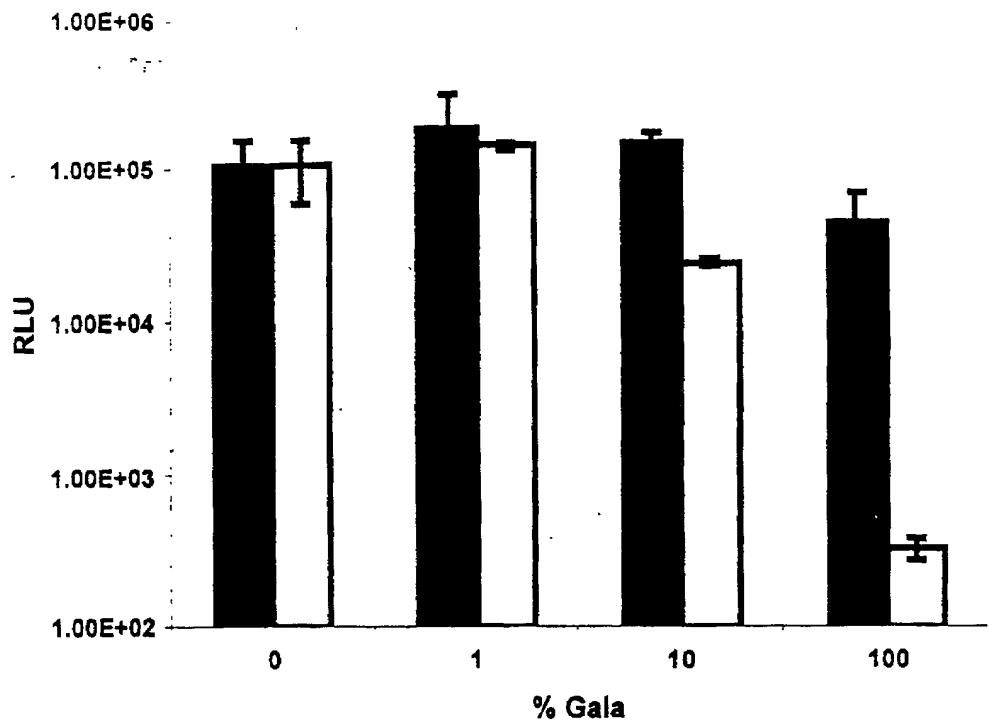


Fig. 6. Luciferase transfection of BHK-21 cells with β CDP-based polyplexes modified with GALA (shaded bars) and GALA-Ad (white bars).

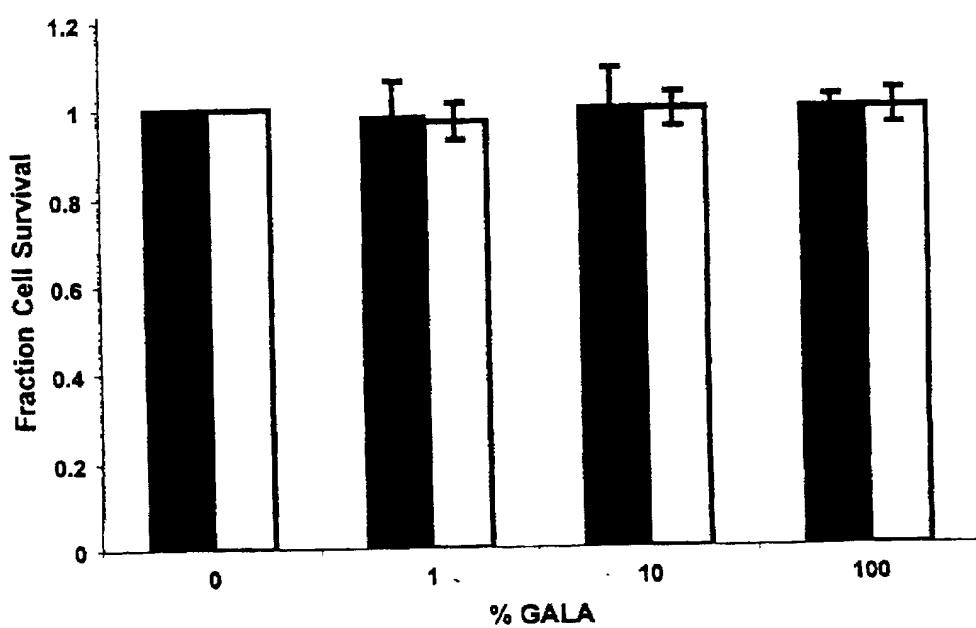


Fig. 7. Toxicity of GALA and GALA-Ad modified polyplexes to BHK-21 cells.

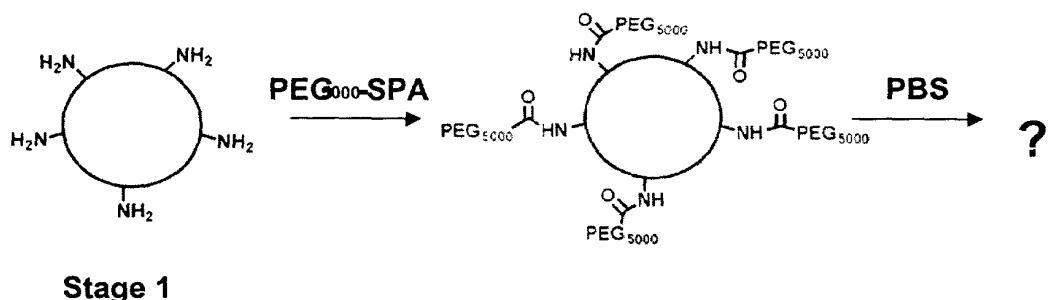


Figure 8: Scheme for post-DNA-complexation pegylation by grafting.

Polyplex	PEG	Stage 1 (nm)	Stage 2 (nm)	Stage 3 (nm)
PEI 3+/-	10:1	58	65	115
PEI 6+/-	10:1	55	60	78
β CDP6 5+/-	100%	70	67.4	303
β CDP6 5+/-	150%	70	X*	N/A
β CDP6 5+/-	200%	70	X*	N/A
β CDP6 5+/-	100% PEG**	67	81	700

*Poor correlation function; no size measurements possible.

**PEG₅₀₀₀ added instead of PEG₅₀₀₀-SPA

Figure 9: Particle sizes of PEI and 12 (β CDP6) polyplexes during post-DNA-complexation pegylation of grafting.

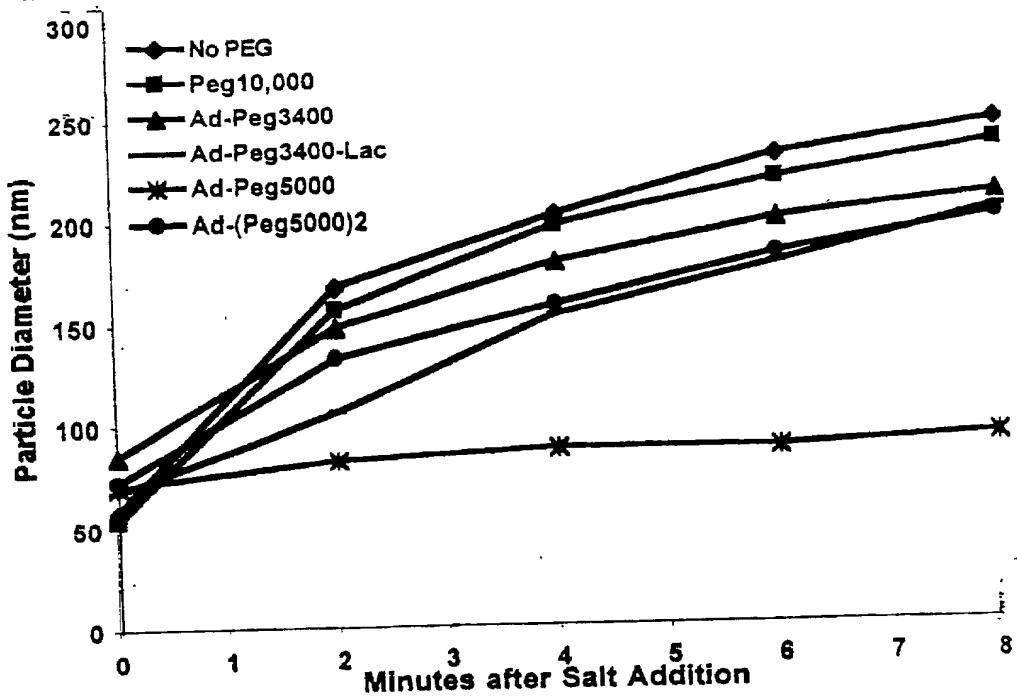


Fig 10 Salt stabilization of polyplexes by pegylation.

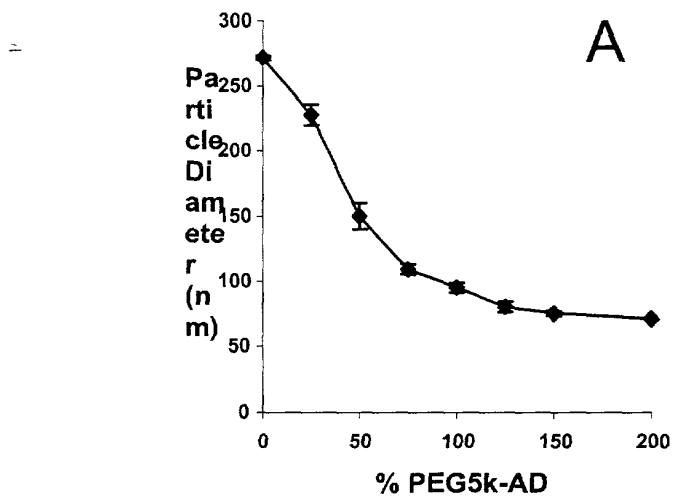


Figure 10A: Stabilization of polyplexes by pegylation.

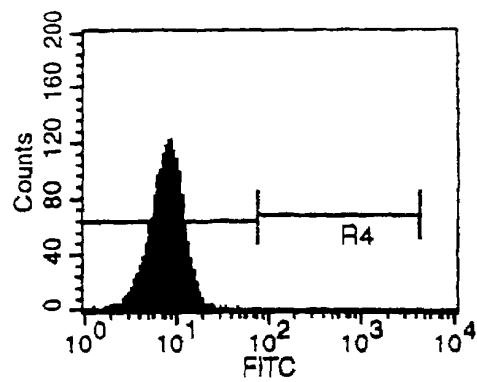


Fig 11a Untransfected HUH-7

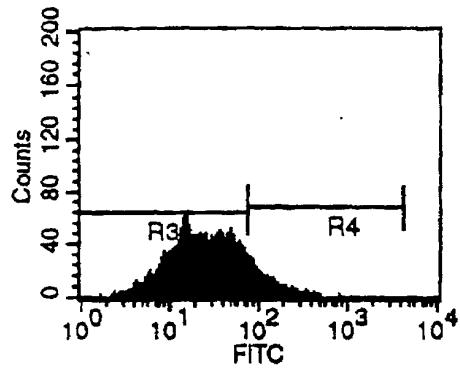


Fig 11b HUH-7 transfected with β CDP6/Oligo + free PEG₃₄₀₀-FITC

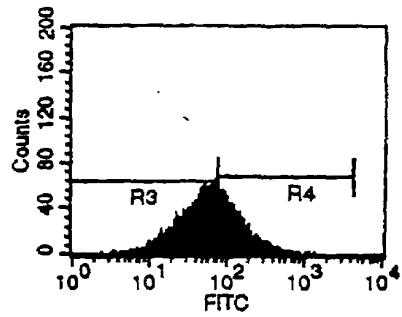


Fig 11c HUH-7 transfected with β CDP6/Oligo/Ad-PEG₃₄₀₀-FITC

Fig 11 Co-delivery of β CDP6 polyplexes with PEG₃₄₀₀-FITC.

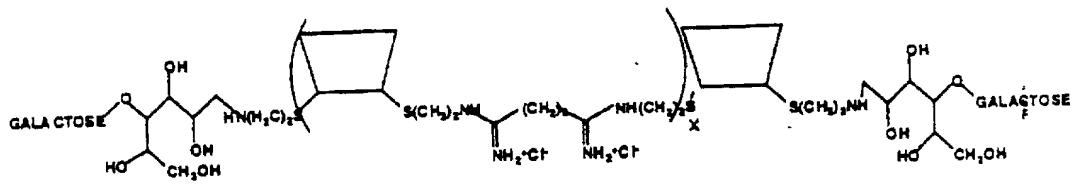


Fig 12 Structure of Lactose-CDP6.

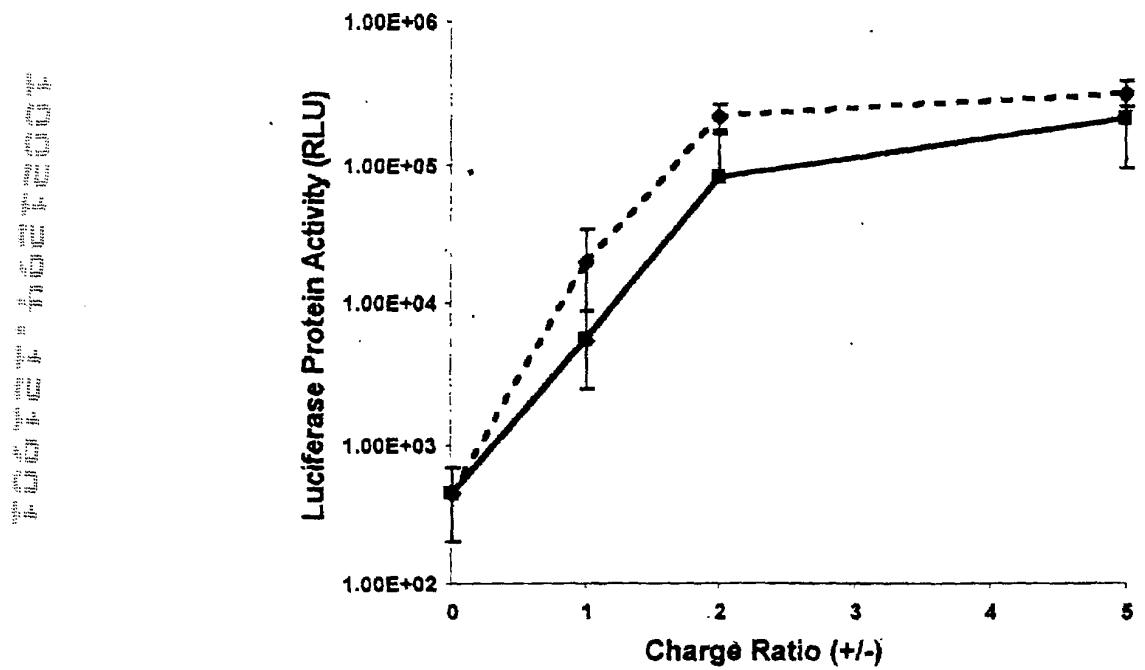
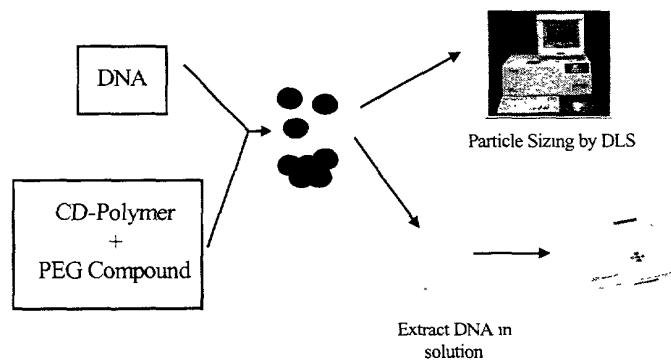


Fig 13 Transfection of β CDP (dashed line) and Lac-CDP6 (solid line) polyplexes to HUH-7 cells.



10 Figure 14. Schematic of Experimental Protocol, Example 47

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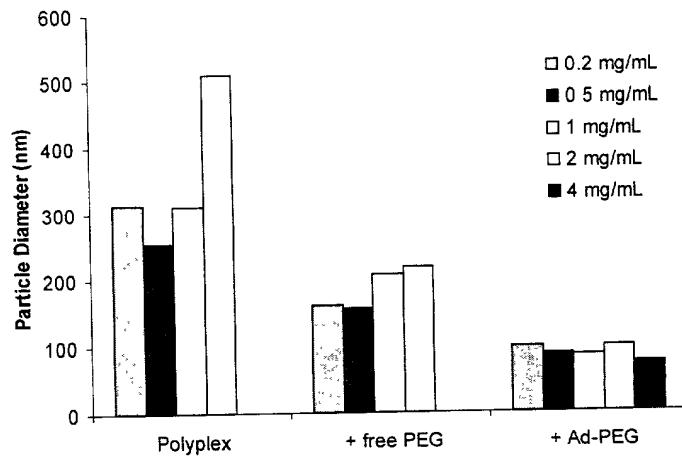


Figure 15. Particle Diameter

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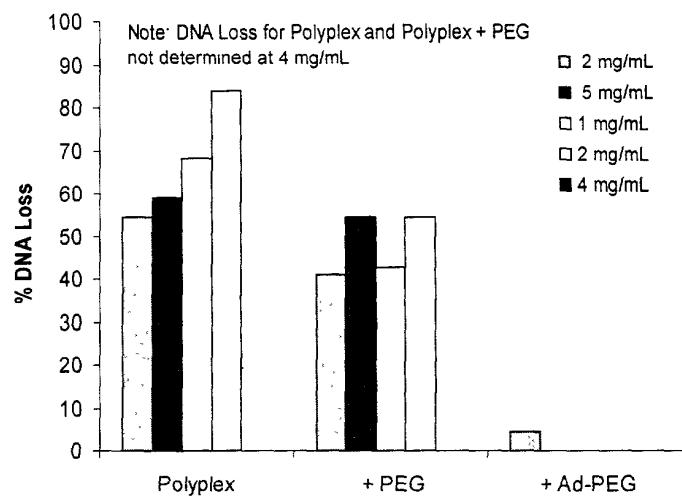
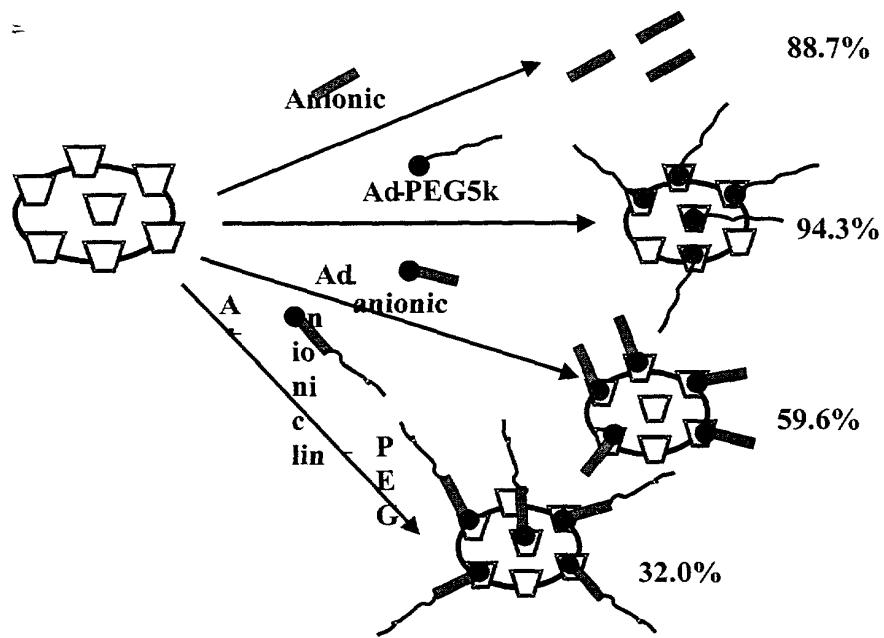


Figure 16. DNA Loss Due to Complex Precipitation



5 Figure 17 Inclusion Complexes to Modify 12/DNA Composite

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**Transfection of Modified Polyplexes to HepG2 cells
(50% PEG)**

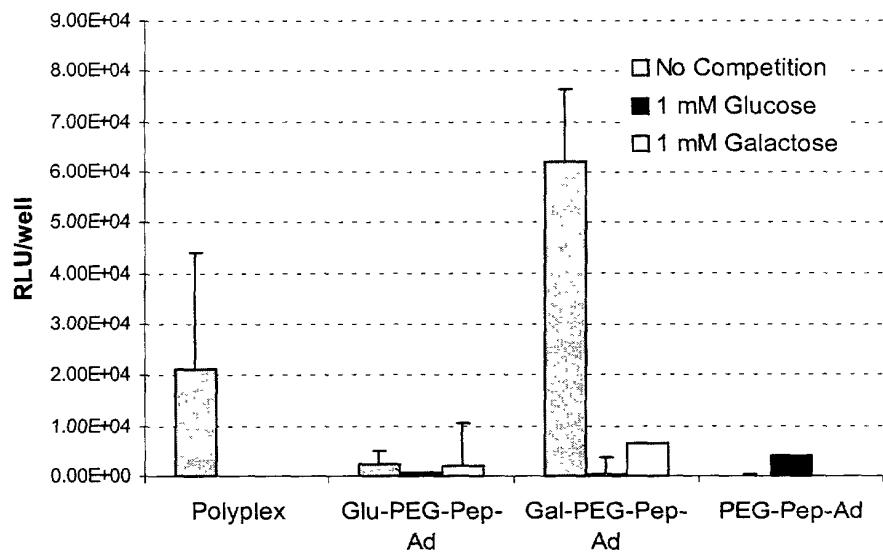
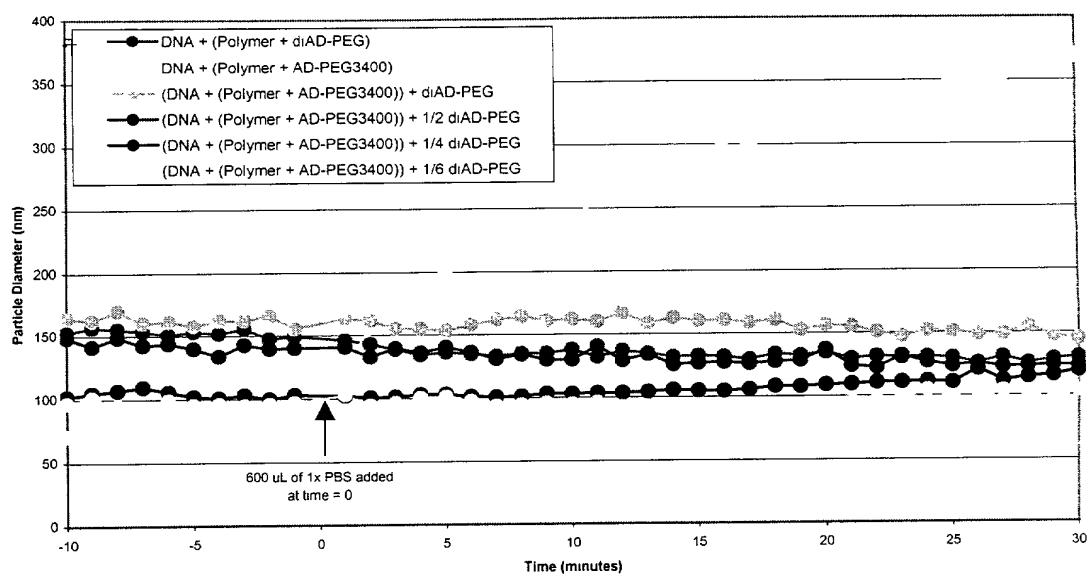


Figure 18



5 Figure 19 Competitive Displacement Experiments

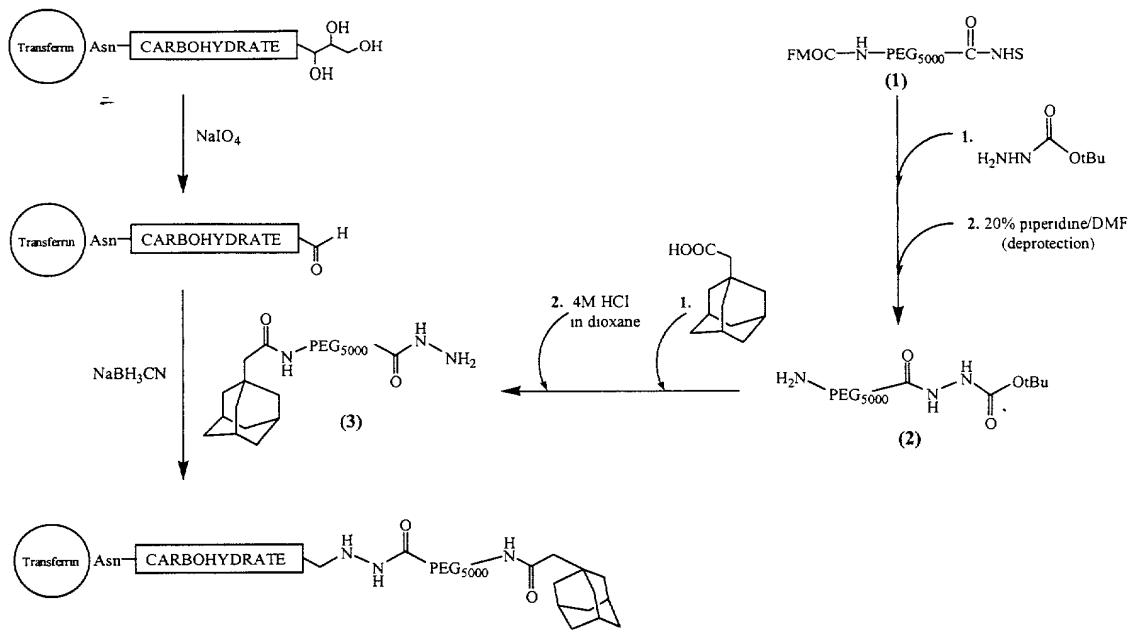


Figure 20 Synthesis of Adamantane-PEG-Transferrin (Ad-PEG-Tf)

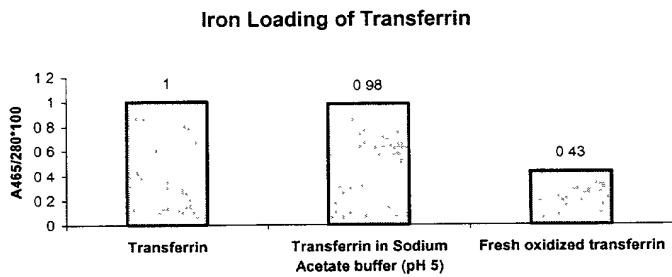


Figure 21

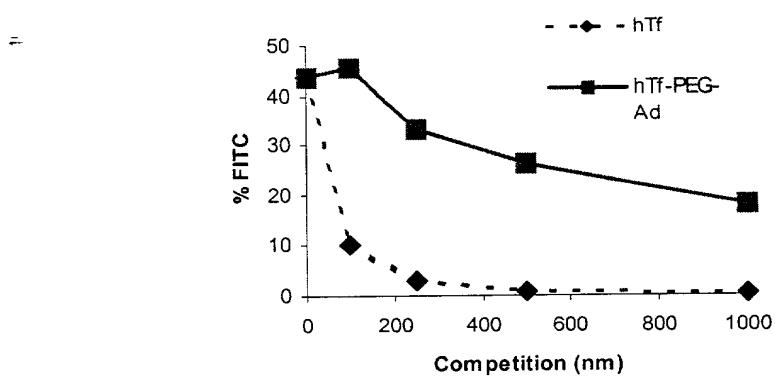
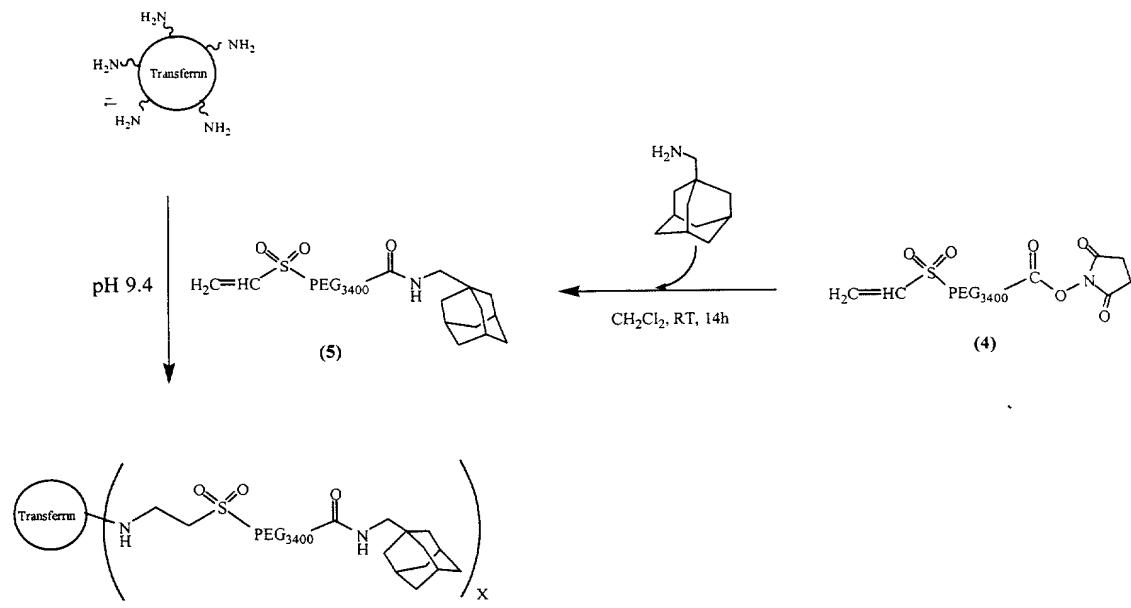
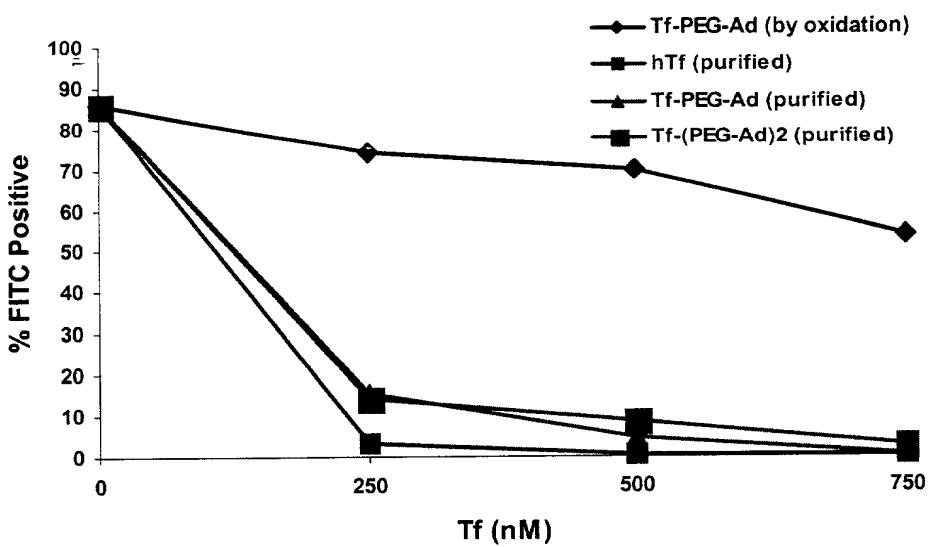


Figure 22 Binding Affinity Transferrin-PEG-Ad



5 Figure 23 Transferrin coupling via Lysine groups



5 Figure 24 Binding affinity of Transferrin-PEG-AD to transferrin receptors on PC3 cells

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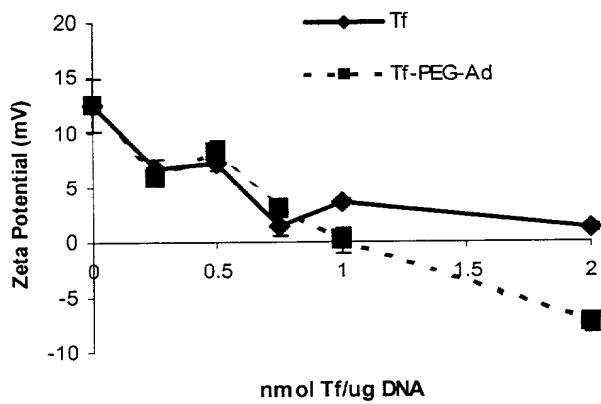
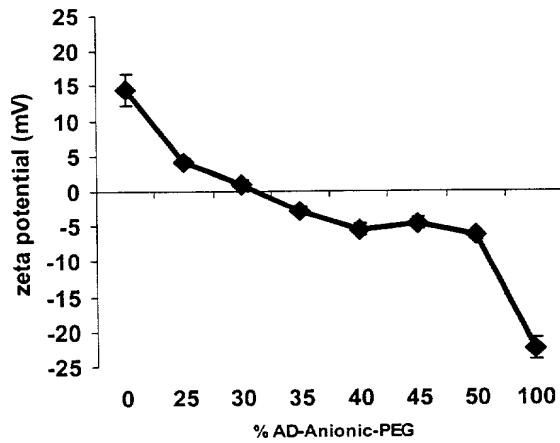


Figure 25 Zeta potential variation and particle size as a function of particle modification in transferrin and PEG-modified polyplexes

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Figure 26 Zeta potential measurements, Ad-anionic-PEG



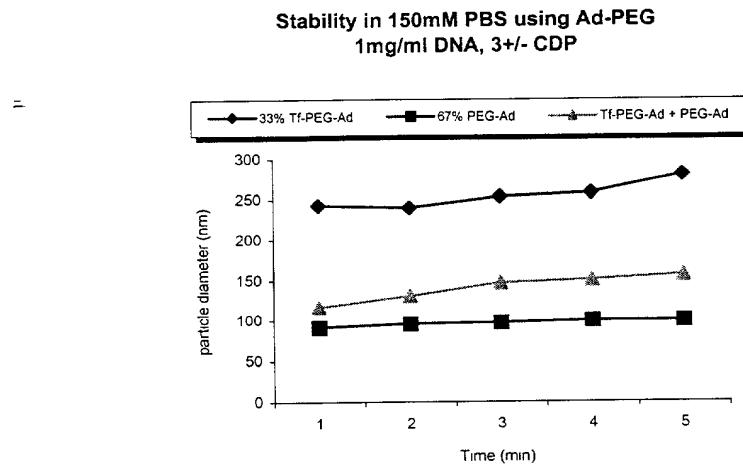


Figure 27

Addition of increasing Tf-Modifier (balance is AD-PEG)
1 mg/mL DNA, 3+/- CDP

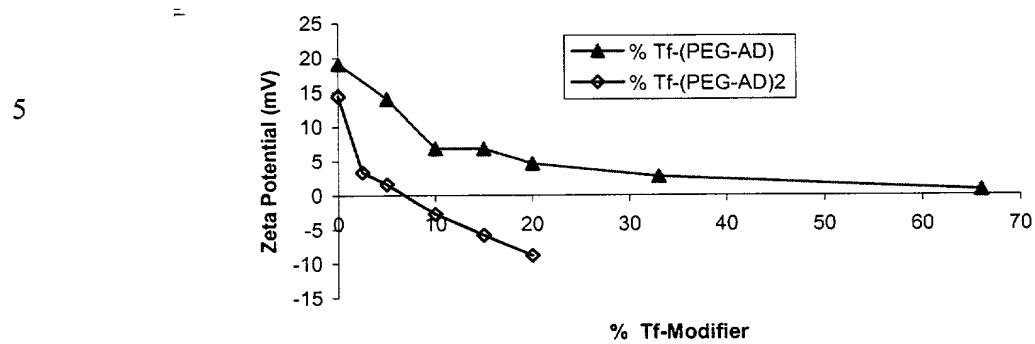


Figure 28

Synthesis of Histidylated β CDP6

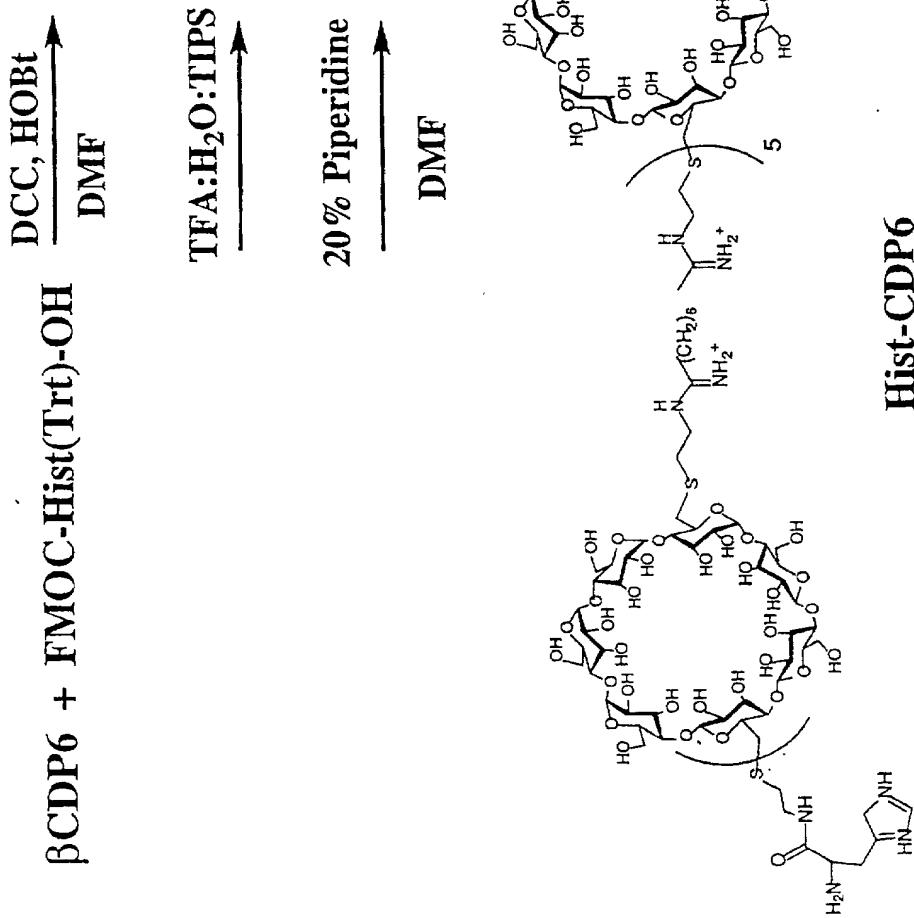


Figure 29

pH-sensitive Polymers for Endosomal Escape

Synthesis of secondary amine containing polymers

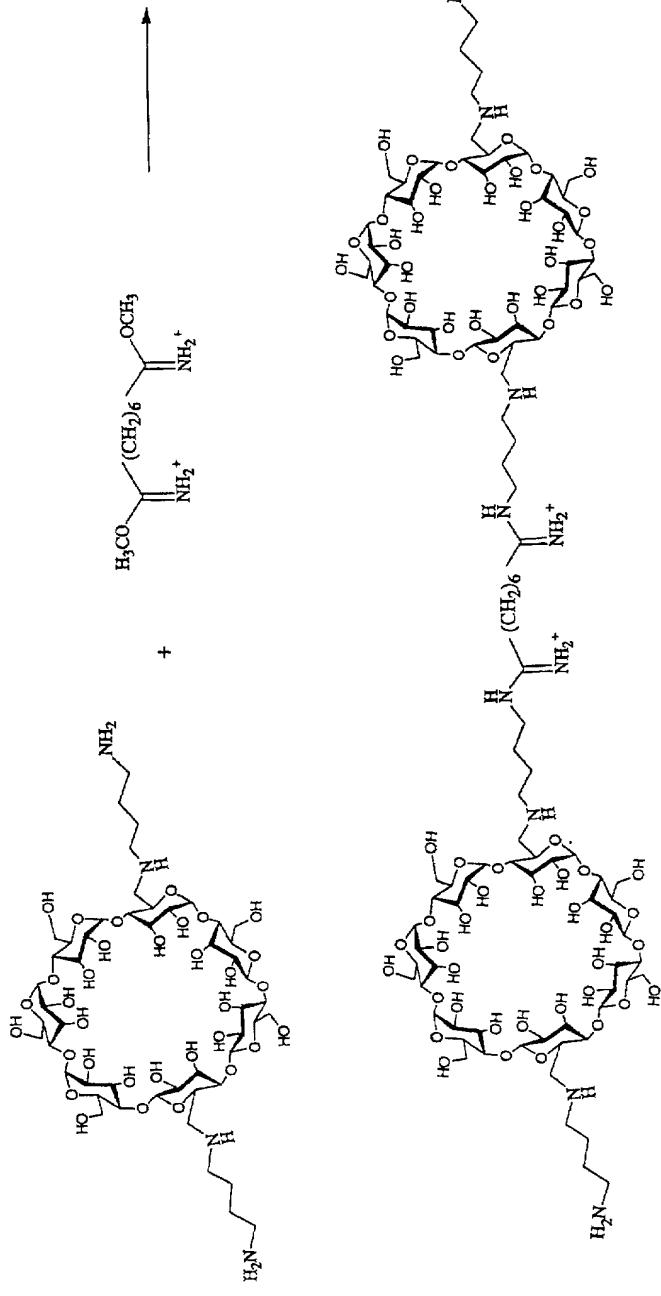


Figure 30